DIPTEROLOGICAL NOTES AND DESCRIPTIONS.

BY EZRA T. CRESSON, JR.

This paper is a collection of notes on, and descriptions of, North American Diptera, made at various times while working over material sent to the writer for determination. It may here be explained that the data within brackets, [ ], refer to the owners of the material in question.

STRATIOMYIDÆ.

Zabrachia magnicornis new species.

Similar to *polita*, but differing in having the frons more curving, without the median longitudinal sulcus; the antennæ are much larger, the scutellum more strongly developed, and the legs darker.

♀. Black; antennae brownish, appearing lighter from the dense, appressed, pubescense or minute granulations. Halteres white with stalk fuscous. Apex of femora, entire middle and hind tibiæ, tawny; apex of fore tibiæ, and tarsi, darker; middle and hind tarsi yellow. Wings hyaline. All pile white and appressed, sometimes appearing silvery. Ovipositor yellow. Frons not sulcate medianly, convex and distinctly protruding above. Antennæ typical but large, situated in the depressed portion of the face and lower frons; third joint nearly as broad as the frons, twice as broad as long; arista straight, two and a half times as long as third. Scutellum strongly convex and subtuberculate above. Stigma hardly twice as long as broad; discal and posterior veins colorless. Length, 3.5 mm.

Type.— ♀ ; Alamogordo, New Mexico, June 6, 1902, (Viereck & Rehn), [A. N. S. P. No. 9192].

A male (2 mm. long) from the same locality may belong here, but in general appearance it seems as though it should be associated with *polita*. However, in the short stigma and third vein it suggests the present species. In this male the head is nearly round in profile. Antennæ dark tawny. All pile erect and white, otherwise similar to *polita*. Apices of all femora all tibiae and tarsi, yellow.

A small female (head wanting) seems to agree with this male in all respects as to color.

EUPARHYPHUS Gerst.

The furcation of the third vein is apparently of no specific value; a female of *tetraspilus* from Aweme, Manitoba, Canada (E. Criddle,

June), has the furcation in one wing but not in the other. Perhaps *bellus* Loew is only a synonym of *tetraspilus* Loew. The extent of yellow, or even the presence or absence of such, on the scutellum is a variable character.

Euparyphus quadrimaculatus new species.

I cannot remark on the relationship of this species on account of the lack of material in this genus. It runs, in Adams's table (*Kans. Univ. Quart.*, II, 28), to *crucigerus* Coq., or *atriventris* Coq., but the abdominal markings are different.

♀. Eyes bare. Head yellow, with occiput except orbits, ocellar transverse band, an orbital spot and a fine dash above antennæ on frons, and antennæ, black. Two brown facial stripes covered by the broad silver along orbits. Cheeks and lower post. orbits silvery. Mesonotum black, with yellow as follows: Two median irregular or interrupted stripes, originating from spot above humeri, but not attaining posterior margin; broad lateral margins including upper half of pleura, but interrupted above base of wings. Scutellum and spines, and halteres also yellow. All pile short and white. Dorsum of abdomen black; lateral margins, a large lateral spot confluent with margin on third segment, and smaller, similar spots on apical margin of fourth, entire fifth, and venter, yellow. Legs yellow, with fore tarsi, hind tibiæ above, four apical joints of middle and hind tarsi, black; base of middle and of hind tarsi white. Wings hyaline with veins and stigma yellow. Mostly micro-granulose. Frons with parallel orbits. Face not prominent at antennæ. Antennæ not longer than head, with first and second joints subequal. Scutellum short, two or three times as broad as long. Third vein short, not furcate; costal distance between stigma and third not longer than stigma, and hardly longer than discal cell; four posterior veins faintly distinct, the last arising near base of discal cell. Length, 4 mm.

Type.— ♀ ; Alamogordo, New Mexico, June 6, 1902, (Viereck & Rehn), [A. N. S. P. No. 6202].

A male from Santa Clara County, California, June, (W. M. Giffard, No. 7), [Cal. Ac. Sci.], is similar but the upper pleural band is narrower.

AOCHLETUS O. S.

The discovery of two species evidently belonging to this genus, but having the eyes pilose, necessitates including other characters, or establishing the genus upon other than those used heretofore, especially in Williston's "Manual." Osten Sacken ("Biologia," i, 38)

was correct in recognizing the antennæ as holding the most important characters in this genus. Three species have been placed in the genus of which I have seen but one, although all seem to agree in the general form of the antennæ and in having the eyes bare. Both *cinctus* O. S. and *bistriatus* Will., are more or less yellow vittate on mesonotum. The former having the face and frons also yellow, while *obscurus* Coq. has the mesonotum entirely black and no yellow on the entire body, although somewhat fuscous beneath the antennae. *Obscurus* also differs from the others in having two polished gibbous calli above the antennæ; the scutellar spines are short, closely approximate with tips curving up. The two species described below differ from all in having the eyes pilose.

The antennæ in this genus, typically, have the first and second joints short, subequal, about as long as broad, or somewhat longer; the third composing of six to eight closely united segments, of which the first three or four are as stout or stouter than the second joint, each about as broad as long, the last tapering to the slender apical segments which seem to vary in length with the different species, and are tipped with one or more minute hairs.

Aochletus albopilosus new species.

This and the following species are apparently allied to *obscurus* Coq., but there are no calli on the frons and the scutellum is broader with well separated spines.

♂. Black; margin of abdomen, knees, and bases of tarsi brown. Halteres white. Eyes black pilose. Pile of ocellar tubercle black, of face black and white, erect. Frontal triangle, facial orbits and post. orbits with appressed white pile. Thorax and scutellum with erect white pile, and appressed silvery white tomen, which on mesonotum leaves three longitudinal bare stripes appearing black. Abdomen with sparse erect pile and tomen as on the mesonotum, leaving the bases of segments bare and black; venter likewise clothed. Legs sparsely white pilose. Head broader than high, and slightly higher than long. Eyes contiguous for nearly full length of frons from the prominent ocellar tubercle; line of demarcation of facets distinct and opposite antennæ. Face short, broad, convex, but not prominent. Antennæ situated slightly below middle of profile, as long as head; third joint more than twice as long as first two together, of about six segments. Thorax robust, slightly longer than broad. Scutellum broader than long, broadly truncate, with two long well separated spines. Abdomen round; lateral margins sharp and thin.

Legs slender, normal. Third vein furcate near tip; four posterior veins of which the last arises at base of discal cell. Discal cell as long as stigma. Length, 8 mm.

Type.—♂; Alamogordo, New Mexico, May 13, 1902, (Viereck & Rehn), [A. N. S. P. No. 6193].

Aochletus nigropilosus new species.

Similar to *albopilosus*, but all erect pile black except a little on the face. Antennæ shorter and stouter, and the scutellum broader with the spines more broadly separated. Length, 9 mm.

Type.—♂; Sonoma County, California, July, [A. N. S. P. No. 6194].

Neorondania scutellata new species.

♂. Black, slightly steel blue, shining; frontal triangle, first, second, and base of third antennal joints, scutellum and spines, apices of femora, yellow or tawny. Halteres and bases of tarsi, white. Eyes black pilose. All erect pile black except on occiput and lateral tufts on second abdominal segment. Otherwise marked with appressed white pile as follows: Face, especially the orbits, three mesonotal vittae interrupted at suture, supra-alar dash, posterior mesonotal margin, notopleural spot, pleura, lateral transverse spot on abdominal segments three and four, larger lateral spot on fifth, venter and more or less of femora and tibiæ. Eyes (moistened) with three horizontal purple lines. Head hemispherical. Eyes contiguous. Face convex above, depressed below. Antennæ as long as head; first joint twice as long as second; third quadrate, three and a half times as long as first and second together. Scutellar spines as long as scutellum, of light color and long black pilose. Abdomen broadly rounded, minutely granulose discally, with distinct impressed sutures. Legs slender, but hind femora somewhat flattened and enlarged beyond middle. Wings brownish hyaline; stigma and cross veins below, faintly fuscus. Length, 8–10 mm.

♀. Similar, but eyes bare. Head entirely tawny; frons as wide as length of first and second antennal joints together. No erect black pile, but design of appressed white pile as in male.

Type.—♂; Costa Rica, (W. M. Gabb), [A. N. S. P. No. 6195]. *Paratypes.*—4 ♀; topotypical.

Actina canadensis new species.

This species is readily distinguished from *viridis* Say by the low situated antennae, which is also shorter and more robust than in that

species. It is further characterized by the dark scutellar spines and the longer stigma. The latter in *viridis* is but little longer than the discal cell and but half again longer than broad.

♀. Similar to *viridis* Say. Frons shining, black with slight greenish tinge, sparingly short white pilose. Face more shining, black with long white pile. Palpi black. Antennæ situated below middle of profile, so that the frons is twice as long as the face, black with basal annulus of third joint brownish and distinctly swollen. Thorax and scutellum shining metallic green, becoming black below, sparingly yellow pilose; spines of the latter also metallic colored. Abdomen shining black. Legs yellow, but fore coxæ and four apical joints of tarsi black. Wings brownish, veins darker; stigma about twice as long as discal cell, and twice as long as broad. Length, 6 mm.

Type.— ♀ ; Aweme, Manitoba, Canada, July 24, 1911, (E. Criddle), [A. N. S. P. No. 6196].

TABANIDÆ.

Silvius jonesi new species.

In general appearance this interesting species does not suggest any affinity with *gigantulus* Loew, but more critical examination makes it reasonably certain that it belongs to a group including that species and is very distinct from any yet described, to my knowledge. It is much larger than that species and the abdomen has black or dark bases to all segments. The tibial and antennal characters certainly place this species in *Silvius*, although in general appearance it suggests some of those in *Pangonia*. The eyes are uniformally green when moistened.

♂. Black; antennæ except four black terminal annuli of third joint, palpi, abdomen except dark bases of dorsal and ventral segments especially towards apex of abdomen, femora except bases, bases of tibiae, tawny or brown. Halteres pale. Wings blackish, more intense along costa. Subopaque. Yellow pruinose above, becoming gray below. All pile on head and thorax yellow and rather abundant, also on the narrow apices of abdominal segments; the broad bases of the segments with appressed black pile, similar on venter. Femora with pale pile which on the tibiæ becomes darker. Pile on first antennal joint and base of palpi, yellow; on second, and apices of palpi, black. No mesonotal vittae. No denuded areas on face. Proboscis not longer than head, and palpi is slightly more than half as long as proboscis. First antennal joint twice as long as second; third twice as long as first and second together; the

thickened basal annulus nearly broad as long, the following annuli together as long as the basal one. Neuration as in *gigantulus*. Length, 17 mm.

♀. Similar but frons twice as broad as width of antennæ, entirely pruinose. Mesonotum more grayish.

Type.—♂; Keddie, Plumas County, California, July 6, 1918, (F. M. Jones), [A. N. S. P. No. 6197]. *Paratype.*—1 ♀; topotypical.

LEPTIDAE.

Arthropeas jonesi new species.

Differs from *americana* Lw., and *magna* Johns., the other known species, in having the legs entirely black. In build resembling *magna*, with a median globose swelling on the face similar to that in *Chrysopila* and nearly visible in profile. *Jonesi* probably represents a distinct genus or subgenus.

♂. Black; antennæ, palpi, and halteres pale, also a small spot on humeri. All pile black and rather long and abundant, including the cilia of the white squamæ. Face, and sparingly on mesonotum, grayish pruinose. Wings blackish, becoming more intense along costa. Thorax and abdomen, shining. First and second antennal joints short, subglobose; third, three to four times as long as first two together, and broader than second, gradually tapering to a minutely truncated apex, bearing a few hairs, not a terminal style, composed of eight annuli, of which the basal and apical ones are longer and subequal. Fore tibiæ with one small apical spur, middle and hind ones with two each. Length, 13 mm.

Type.—♂; Keddie, Plumas County, California, June 6, 1918, (F. M. Jones), [A. N. S. P. No. 6198].

Chrysopilus nudus new species.

This species suggests *flavibarbis* Adams, but the mesonotum of the female is not velvety and the pile and tomen are not yellow.

♂. Black; stalk of halteres, tibiae and bases of tarsi, pale. Wings slightly brownish. Opaque, grayish. Mesonotum dorsum, broad bases of abdominal segments, brownish. All pile and tomen sparse and white. Antennæ bare. Eyes narrowly separated. First antennal joint shorter than second. Palpi long, falciform, white pilose. Branch of third vein originating opposite end of first vein. Length, 5 mm.

♀. Similar, but stouter. Frons broad and brownish medianly. Mesonotum with a broad median stripe and two large sublateral

spots brown. Hind femora sometimes pale. Branch of third vein originating before tip of first; anal cell closed before margin.

Type.—♂; San Jacinto, California, May 29, 1917, (E. P. Van Duzee), [Cal. Acad. Sci.]. *Paratypes.*—1♂, 2♀; topotypical.

Chrysopilus dilatus new species.

Differing from all known species by the enlarged first antennal joint. Thus suggesting *Symphoromyia* but the arista is terminal and the anal cell is closed.

♂. Black; stalk of halteres, knees, tibiæ and bases of tarsi, paler. Opaque. Blackish brown, with face, pleura below, and venter more grayish. Erect pile of ocellar tubercle, face, palpi, antennæ, mesonotum, scutellum, sternopleura, fore coxæ, and femora, black; of occiput, pteropleura, and abdomen, pale. Sparse tomen on mesonotum, abdomen and femora, pale yellow or whitish. Wings hyaline; stigma brown. Eyes narrowly separated or contiguous. First antennal joint much enlarged, twice as long as second and third together, nearly as broad as long, with dense, long pilosity. Palpi long, falciform, densely long pilose. Anterior branch of third vein originating before tip of first vein. Anal cell closed before margin. Length, 6 mm.

Type.—♂; Berkeley Hills, Alameda County, California, April 11, 1908, (E. T. Cresson, Jr.), [A. N. S. P. No. 6199]. *Paratypes.*—2♂; topotypical.

BOMBYLIIDÆ.

Exoprosopa fumosa new species.

This species suggests some of those belonging to *Poeciloanthrax*. It belongs to the group, in this genus, having the second abdominal segment black tomentose. The wings are fumose with the cells in the inferior part of the wings sub-hyaline.

♀. Black; oral margin and scutellum, paler. Knob of halteres whitish. Pile black on: head, disk of mesonotum, scutellum, pectus, apex of abdomen. Yellow on: collar, lateral mesonotal margins, meso- and meta-pleura, lateral margins of abdominal segments 1–5. Tomen all yellow except dorsum of second abdominal and bases of third to fifth segments. All bristles black. Wings uniformly brown except subhyaline areas in: apex of marginal, apex of first submarginal, second and third submarginals, discal, second to fourth posteriors, anal, and axillary. (In other words, the veins traversing the subhyaline inferior portion of the wings are broadly clouded

with brown.) Style one half as long as third antennal joint. Face conical; epistoma narrow, pilose. Proboscis not protruding. Fore tibiæ slender, bare; hind femora slender, with long bristles. First posterior cell open. Length, 9 mm. Wings, root to tip, 18 mm.

Type.— ♀ ; Nogales, Sonoma, Mexico, August 12, 1906, (P. P. Calvert), [A. N. S. P. No. 6200].

Exoprosopa jonesi new species.

Allied to *doris* O. S., but the antennae are entirely black, and the second band of the wings is more extensively developed towards the margin. In the paratype this band broadly attains the margin. The yellow tomentose design of the abdomen suggests *grata* Coq.

♀. Black; lower frons, face, scutellum, lateral abdominal margins, venter, femora, tibiæ, bases of tarsi, tawny. Club of halteres pale. Wings with bases of first and second basals, anal, and axillary cells, hyaline. Bases of first submarginal, first posterior, discal, third and fourth posteriors, and more or less of apices of anal and axillary cells, infuscated. Second band of infuscation includes base of second posterior nearly to margin along the veins. Base of third submarginal also infuscated, but apex of marginal is hyaline. Pile black on: frons, face in part, first and second antennal joints, mesonotum; lateral margins of second and following abdominals slightly mixed with black, pale. Pile pale on face in part, collar, mesonotum laterally, pleura, coxæ, lateral margins of first abdominal segment and venter. Tufts of white pile above and below roots of wings. All tomen yellow except silvery along orbits, and black on some parts of pleura and on apices of second to fifth abdominal segments; also medially almost to bases of third to fifth segments, becoming stronger on base of fifth. No white tomen on abdomen except some on venter, but that on the second segment is slightly paler than on the other segments. Tomen on legs yellow. Second antennal joint twice as long as first; third as long as first two together, long, conical; style rather thick and slightly flattened, a fourth to a third as long as third joint. First posterior cell open. Tooth of claws small. Length, 12 mm.

Type.— ♀ ; Keddie, Plumas County, California, July 3, 1918, (F. M. Jones), [A. N. S. P. No. 6214]. *Paratype.*—1 ♀ ; topotypical.

These specimens were captured hovering over nests of a species of *Bembex*.

Exoprosopa (Exoptata) ingens new species.

Similar to but much larger than *divisa* Coq. The pile of the mesopleura is mostly black as is also the tuft beneath the wings.

The legs are entirely black. The wing pattern is more extensively developed, and the cross veins not noticeably subhyaline.

♀. Black; frons and face, first and second antennal joints (third wanting), scutellum, second and third abdominal segments laterally, bases of ventral segments, tawny to rufous. Knob of halteres pale. Wings brown or grayish brown, hyaline as follows: apex of marginal cell to base of second submarginal, apex of first submarginal, entire second and third submarginal, apices of first to fourth posteriors, and large median area in discal. Somewhat subhyaline areas on the cross-veins. Opaque. Pile black on: frons, face, first and second antennal joints, mesonotum, humeri, notopleura, mesopleura below, pteropleura, lateral margins of second and following segments, apex of abdomen, fourth and following ventrals, and all coxæ. All bristles black. Pile yellow on: collar, upper mesopleura, lateral margins of mesopleura, scutellum laterally, propleura, sternopleura, and lateral margin of first segment. Pile white on roots of wings, and second and third abdominal segments. Tomen mostly yellow, but black on: legs, broad apex of second abdominal, narrow apex of third, all of fourth and fifth except basal angles, medianly on sixth and seventh, and fourth and following ventrals. Narrow base of second abdominal, yellow; broad base of, third especially laterally, whitish; second and third ventrals white. Posterior orbits whitish.

Structurally same as *divisa* (by comparison with my specimens of that species) but more robust. Length, 20 mm.

Type.— ♀ ; Florence, Arizona, (C. F. Biedermann), [A. N. S. P. No. 6201]. *Paratype.*—1 ♀ ; topotypical.

Anastoechus barbatus.

1877. Osten Sacken, Bul. U. S. Geol. Surv., III, 252.

The species of this genus are easily separated from those of *Systoechus* by the thick, facial pile. Material before me consisting of 11♂, 14♀, from Long Island, N. Y., North Carolina, Texas, Colorado, and New Mexico, fall into two groups. One having the knob of halteres pale yellow, the other with the knobs black or brown. There seems to be no corelation of these characters with the difference in locality. The only two from the eastern Atlantic region have the knobs pale; others from Colorado and Texas have the same.

A male from Europe, determined as *nitidulus* Fab., has a distinct, dorsal median line of dense white tomen on the abdomen which is not present in any of the other males before me from the

above cited localities. As this character may be typical of *nitidulus*, we had better adhere to Osten Sacken's name for our form.

Spogostylum vierecki new species.

Similar to *vandykei* Coquillett. Pile of face black, but a few pale hairs near oral margin, margins of mesonotum, and pleura mostly black. Thorax, scutellum, and abdomen with yellowish white tomen. The wings also differ from each other in their maculation.

♂. Black; tibiæ, bases of tarsi, knob of halteres, lateral margins of abdomen, part of venter, and genitalia, tawny. Wings hyaline; basad of humeral cubital vein, middle spot in first basal, veins at bases of first, second and third submarginals, first and fourth posteriors, broadly clouded. Costa to tip grayish. Opaque; mesonotum slightly shining. Pile of head black, with slight mixture of pale along oral margin. Collar and pleural pile pale. Some stiff black hairs or bristles along margins of mesonotum, of scutellum, and on pleura at roots of wings. Pile of lateral margins of first abdominal segment white, of remainder of abdomen, black. Legs with black bristles. Tomen pale yellow on: head, thorax, scutellum, and legs. On second and following abdominal segments, nearly white, and dense. Three or four spots of black tomen on apical margins of second to fourth segments. Structurally normal of *Argyramoeba*, with veins connecting second and anterior branch of third veins; fifth vein between discal and third posterior cells withan angulation, sometimes with a small stump into latter cell. Length, 6–9 mm.

♀. Similar, but the tomen of abdomen is mostly yellow with the series of black spots more pronounced on other segments.

Type.—♂; Alamogordo, New Mexico, April 25, 1902, (Viereck & Rehn), [A. N. S. P. No. 6203]. *Paratypes.*—3♂, 6♀; topotypical, 7♂, 1♀; El Paso, Texas, April 4–5, 1902, (Viereck & Rehn).

ANISOTAMIA Macq.

1840. Macquart, Dipt. Exot., II, (1), 81.

Some confusion exists regarding the validity of this and *Ogcodocera* Macq. (1840). There is general agreement that the two may be synonymous, and for the present they had better be considered so. Becker[1] tries to separate them, but apparently, judging from an examination of his descriptions and table, he did not know either material or literature regarding these genera. *Anistomia* has priority

[1] 1913. An. Mus. Zool. Ac. Imp. Sci. St. Petersb. XVII, 421–502. 1912.

of two pages over *Ogcodocera* (= *Oncodocera* O. S., 1878) and so must be used for our species. Further study of material from all countries will probably result in a different nomenclature for our forms. North America has *Mulio leucoprocta* Wied. (1828), *Anthrax valida* Wied. (1830), and *Anisotomia fasciata* Will. (1901), now credited to this genus.

Genotype.—*Anisotamia ruficornis* Macq. (1840). [Coq. 1910].

EPACMUS O. S.

I should keep this genus separated, at least subgenerically, from *Aphoebantus* on account of the projecting face.

Epacmus modestus Loew?

1872. *Leptochilus modestus* Loew, Berl. Ent. Zeit., XVI, 77. (Cent. x, 40.)

A female from Alamogordo, New Mexico, May, (Viereck), apparently belongs to this species, but the bristles of the hind margin of mesonotum (not of postalar calli), and scutellum are black. Lower part of face is polished. Pile and tomen of occiput, pleura and venter, white; of mesonotum and scutellum, yellow. Scutellum not noticeably emarginated. Length, 8 mm.

Epacmus pallidus new species.

Similar to *modestus*, according to description, in having the eyes contiguous, but differs in having the palpi pale and lacking the black bristles or tomen on the abdomen.

♂. Black; oral margin, palpi, halteres, part of genitalia, tibiæ, bases of tarsi, pale tawny. Wings clear, veins yellow. Opaque, with two polished swellings on apex of scutellum. All bristles pale. Pile except on ocellar tubercle, and tomen on thorax and abdomen, white or slightly yellowish. A dorsal, median transverse fascia of brown tomen on segments 2–5, not attaining lateral margins (absent in some specimens). Genital segments not tomentose. Eyes contiguous for about a distance equalling length of ocellar tubercle. Third antennal joint longer than first and second together, gradually attenuating to a rather truncate apex which bears a short style. Face projecting beyond second antennal joint. Proboscis projecting equal to length of antennae. Scutellum emarginated. Length, 4–5 mm.

♀. Similar but pile on frons above dark. Third antennal joint more slender apically.

Type.—♂; El Paso, Texas, April 5, 1902, (Viereck & Rehn), [A. N. S. P. No. 6204]. *Paratypes.*—3♂, 1♀; topotypical.

ECLIMUS Loew.

1844. Loew, Stet. Ent. Zeit., v, 154.
1877. *Epibates* Osten Sacken, Bul. U. S. Geol. Surv., III, 268.

A large number of species of this genus have been described from our fauna, and it may be inadvisable to add to the list, especially as most of the species described are represented by only one sex. Some of the species seem to be sexually dimorphic, which is more reason why care should be taken in describing new forms. The two species herein described are apparently represented by both sexes.

Eclimus laniger new species.

Apparently near *funestus* O. S., but no mention is made in the description of that species of the conspicuous golden yellow, appressed, wooly hair of the mesonotum and abdomen which is present in this species. It is also not likely that the present species is conspecific with the eastern *funestus*.

♂. Black; squamæ, stalk of halteres, pale. Legs light to dark brown. Wings brownish, becoming more intense along costa beyond anterior cubital vein, and diluting to hyaline basally especially in anal cell. There is a distinct infuscation in submarginal above anterior cubital vein where the wing is slightly wrinkled. Opaque, velvety black. Frons, face slightly, cheeks, occiput below, pleura, white to gray. Pile black on ocellar tubercle, upper occiput, face, first and second antennal joints, mesonotum, pleura above, scutellum, and fourth and following abdominals. White on cheeks and occiput below, pleura below, and venter of first to fifth segments. First to third abdominal segments yellowish laterally. Mesonotum, scutellum, abdomen (especially apices of first to fifth segments) sparsely golden yellow lanuginose. All bristles black, also tuft of metapleural pile. Head not much broader than high, hemispherical in profile. Eyes contiguous for nearly full distance to antennæ. Third antennal joint longer than first and second together. Mesonotum distinctly mucronate, but costa smooth. Length, 7–9 mm.

♀. Similar, but all pile except on frons white. Infuscation of wings more even except that the stigma, marginal, and first basal cells are more intense, and there is some clouding on the cross veins; second basal, anal, and axillary cells hyaline.

Type.—♂; Mesa Grande, Sonoma County, California, June, 1908, (J. P. Baumberger), [A. N. S. P. No. 6205]. *Paratypes.*—1♂, 1♀; topotypical.

Eclimus yosemite new species.

The two specimens representing this species are so different in coloration that, were they not taken at the same place and time, one would be certain to consider them distinct species. Of course, it is possible that they are distinct, but it would be inadvisable to consider them as such. The male differs from the description of *luctifer* O. S., in that the mesonotum is not mucronate. The female differs from *magnus* O. S., in that the pile of the mesonotum is white.

♂. Black; squamæ and stalk of halteres, pale. Wings nearly uniformly intense brown, becoming most intense along costa, with slight dilutions basally towards axillary cell, Opaque, velvety black, but oral and scutellar margins shining. All bristles black. Pile black on ocellar tubercle, first and second antennal joints, frons, face, occiput medianly as a continuation of the notopleural stripe, lateral margin of abdomen, all of sixth and following segments, ventral segments, and legs. White on cheeks, occiput below, pleura, metapleural tuft, and squamæ. Yellowish on occiput above, mesonotum, scutellum, dorsum of segments one to five. Some pile on mesonotum laterally; apices of abdominal segments one to five, wooly and somewhat appressed. Head much broader than high, subhemispherical in profile. Eyes separated for about width of first antennal joint. Third antennal longer than first. Mesonotum not mucronate. Costa smooth. Length, 8 mm.

♀. Similar but larger (12 mm.) and more robust. Wings dilute brown, becoming intense at costa and on anterior cubital vein. Bristles pale. Pile on occiput above, mesonotum, scutellum, squamæ, metapleural tuft, and dorsum of segments 1–4, white, and generally long, becoming appressed and curly on lateral mesonotal margins and apical margins of abdominal segments. All other pile on head, pleura, venter, and fifth and following segments, black and abundant. Length, 12 mm.

Type.—♂; Yosemite Valley, California, May 22, 1908, (E. T. Cresson, Jr.). [A. N. S. P. No. 6206.] *Paratype.*—♀; topotypical.

GERON Meigen.

Were it possible to have all material of this genus in perfect, unabraded condition, there might be some chance of finding more characters of differentiation than one is able to do with the specimens usually met with in collections. The study and examination of the small amount of material before me, however, gave some results worthy of note, and which will at least separate several species

without much trouble. The types of Loew, Coquillett, and others, should be studied in conjunction with the few notes given below in order to fix more definitely the status of some of the species of those authors. To eliminate the chances of misidentification, I give new names to the forms herein described, knowing full well that there is a possibility of synonymy regarding some of them.

The form of the genitalia of the male and of the seventh ventral segment of the female, offers the most satisfactory characters for separating several species, or, possibly, groups of species. The venation, with one exception, offers no usable characters, but the color of the vesture may prove to be more valuable if perfectly preserved specimens are available for study. In other respects, in structure and color, there seems to be very little of value. The genitalia of the male offers two distinct types, which may, on more detailed study, show still other characters of value. The organs mentioned are generally well exposed and easily seen. One type has the "claspers" well developed, paired, upper and lower, finger-like. The other type has no distinctly developed "claspers," but the parts corresponding to these are developed into a polished, chitinous, half disk-like organ, with a rosette of two to four thorn-like processes or filaments. As mentioned above, there are probably, within these two types, other characters which may prove valuable. In the present study this detailed examination is not undertaken.

Geron digitaria new species.

♂. Black; oral margin, halteres including stalk, squamæ, bases of wings, pale yellowish. Tibiæ brownish. Opaque. Frons, face, occiput below, lateral margins of mesonotum, pleura, venter, femora, gray to white pruinose. All pile silvery white, becoming slightly dusky on dorsum where it is sparse. Dorsum also sparsely golden lanuginous, becoming silvery below. First antennal joint black, pilose. Third longer than first two together, slender, conical. Ultimate section of fourth vein longer than preceding. Claspers of hypopygium finger-like. Length, 5 mm.

Type.—♂; Highrolls, New Mexico, June 11, 1902, (Viereck), [A. N. S. P. No. 6207.]

A series of eight males from New Jersey, Pennsylvania, Maryland, Delaware, and Virginia, varying in size from 3–5 mm. are apparently conspecific. The pile on the dorsum, when present, is generally golden brown. A series of seven females from Pennsylvania and Maryland may be associated with the above males, and are similar,

with the frons brown and golden lanuginose medianly; orbits cinereous. The seventh ventral with sublateral, rounded lobes, which, at most, slightly overlap.

The above specimens may be *subaurata* Lw., or *vitripennis* Lw., while *albipennis* Lw., may be represented by a series of 6♂, 12♀ from Cloudcroft, (May), Alamogordo, (April), Highrolls, (June), East Las Vegas, (June), all of New Mexico, and Ysleta, Texas, (April), this specimen differing from the above as follows: Dorsal pile white; the lanuginose vesture not so yellow, that of the frons in ♀ being entirely silvery.

The two forms seem to be more or less intergradant but may prove to be distinct species upon more detailed study.

Geron digitaria var. **robusta** new variety.

Ranging larger than the typical form, and very similar except that the pile of first antennal joint is white; of the dorsal surfaces of the body, golden yellow as is also the lanuginose vesture above. The lobes of the seventh ventral are somewhat pointed and are more distinctly developed, apparently as separated developments of the ventral segment. The male of this form may be difficult to separate from those of *digitaria*, but the female certainly represents a distinct variety. Length, 5–7 mm.

Type.—♀; Hancock, Maryland, August 15, (F. R. Cole), [A. N. S. P. No. 6208]. *Paratype.*—1♀; topotypical.

Geron nivea new species.

Similar to *digitaria* but all pile snow white; the lanuginose vesture white and yellow mixed on the dorsum; middle tibiæ pale. Genitalia of male broad when seen from above, with a lateral, subapical, conical tubercle and a lateral subbasal spine-like filament. The females have no golden tomen on the frons, and the lobes of the seventh ventral overlap, appearing as a ventral segment.

Type.—♂; East Highlands, California, September 15, 1914, (F. R. Cole), [A. N. S. P. No. 6209]. *Paratypes.*—1♂, 1♀; topotypical. A male from Alamogordo, New Mexico, April, (Rehn & Viereck), seems to be conspecific.

A series of 6♂, 3♀, Manayunk, Pennsylvania, Jamesburg, New Jersey, and Linnieville, Maryland, July, (R. C. Shannon), are probably a variety of this species. The dorsal pile is yellow and the lanuginose vesture yellow.

Phthiria psi new species.

This form runs to *divisa* in Coquillett's table (*Trans. Amer. Ent. Soc., xxi, 102*) but differs considerably from that species.

♀. Yellow, with black as follows: Spot on ocelli, frons medianly, tip of third antennal joint, proboscis, three broad, more or less coalescing mesonotal stripes, the lateral ones abbreviated anteriorly and somewhat interrupted at suture, the median one abbreviated posteriorly also, spot on mesopleura, sternopleura and on hypopleura, and apices of tarsi. Wings hyaline. Pile sparse, short and pale. Head much broader than long. Vertex one-third width of head. Proboscis extending twice length of head; palpi a little beyond epistoma. Costal length between second and fork of third three times that between first and second; anterior cross vein far beyond middle of discal cell. Length, 3.5 mm.

Type.—Redlands, California, 1912, [F. R. Cole Coll.].

In some specimens the frons may prove to be dark medianly and the abdomen shows dark bases to segments.

Lordotus divisus new species.

Distinguished from all known species by the entirely black pile on the thorax and abdomen.

♂. Black; knob of halteres and squamæ whitish yellow. Wings clear; veins yellow; antecostal cell black. All pile black, becoming brownish on scutellum. Cilia of squamæ alaris white, of squamæ thoracalis brown. First antennal joint nearly as long as third; second not longer than broad. Proboscis extending in length equal to that of head and thorax together; palpi as far as second antennal joint. Length, 6–8 mm.

Type.—♂; Alamogordo, New Mexico, April 30, 1902, (Viereck), [A. N. S. P. No. 6215].

Heterostylum vierecki new species.

Differing from *robustum* O. S., in having the scutellum black, and the pile of the second abdominal segment wholly black. Differing from *sackeni* Will., in having the facial pile white.

♂. Black; face, halteres, fourth and fifth abdominal segments excepting a medial stripe, fore and middle tibiæ, pale. Wings entirely brown, becoming diluted along inferior margin. Pile black on ocellar tubercle, frons, first antennal joint, scutellum in part, all on second, sixth and genital segments, third except basal row, medially on segments 4–5, and most of venter. White on face, occiput, pleura, first abdominal segment. Yellow on mesonotum, scutellum in part, and remainder of abdomen, but on latter mixed with white. No bristles except the red ones at roots of wings. Opaque. Frons, face, first

and second antennal joints, occiput and pleura, gray to white pruinose. Mesonotum rather brownish. Scutellum slightly shining. Femora and tibiæ yellow tomentose. First antennal joint one-half as long as third; second globose; third gradually tapering to a minutely styled apex. Proboscis extending, in length equal to head and thorax together. Palpi short. Length, 7–9 mm.

♀. Similar, but pile on mesonotum mostly black.

Type.—♂; Alamogordo, New Mexico, April 22, 1902, (Viereck), [A. N. S. P. No. 6216]. *Paratypes.*—1♂, 1♀; topotypical. 4♀; El Paso, Texas, April 5–26, 1902.

The series shows little variation. The line of fine white hairs of the third abdominal segment is sometimes wanting, and the black pile of the fourth segment sometimes extends to basal half; the pale pile limited to the mixture on the lateral margin and on the pale ground-part of the fourth and fifth segments.

Bombylius facialis new species.

♂. Black; face brown; halteres whitish; apices of middle and hind femora, all tibiæ, yellow to tawny. Wings infuscated basally and along costa, becoming hyaline apically and inferiorly. Face shining; mesonotum and scutellum subopaque. Frons yellowish pilose, and yellow tomentose; tubercle, face and antennæ, black pilose; occiput, mesonotum, and scutellum, pale yellowish pilose; abdomen also pale except narrow apices of segments 2, 3, 4, which are black. Cheeks, pleura, pectus and venter, white pilose. Femora white tomentose; fore and middle ones with white hairs, and hind one with black bristles, below. Apices of second to fifth abdominal segments pale yellow tomentose which is slightly more dense medially, suggesting a medial dorsal line. Third antennal joint longer than first two together, cylindrical, narrower than second, with short terminal style. Proboscis as long as head, thorax, and abdomen together. First submarginal cell not broader at apex than at base of second submarginal. Length, 7–8 mm.

Type.—♂; Rim of Grand Canyon, Arizona, 7000 feet, alt., May 23, 1918, (F. M. Jones), [A. N. S. P. No. 6213].

A female from Oracle, Arizona, April 28, (F. M. Jones), is apparently conspecific with the above male. It has the dorsal pile more yellowish; tomen of abdomen covering the entire segments; pile at vertex black; anterior part of frons with pale pile and pale tomen; a little pale pile at epistoma; third antennal joint broader and suddenly pointed apically.

I cannot associate these specimens with any description, but realize that in this little understood genus they may have been described previously. However, I hesitate to let these well-preserved specimens remain in the collection without a name or with a temporary determination.

MYDAIDÆ.

Ecthypus limbatus Will.

1886. Williston, Trans. Am. Ent. Soc., XIII, 292.

Before me is a male from Waterman Canyon, Amador County, California, May, (J. C. Martin), [Cal. Acad. Sci.], which is apparently this species. The species is based on a female from Arizona. The male is herewith briefly described.

Rufous; occiput, frons, proboscis, apex of third antennal joint, three mesonotal stripes, notopleural stripe, pectus, bases of first and second abdominal segments, lateral margins of remaining segments, bases of ventral segments, and apical appendages of hypopygium, black. Apical margins of dorsal and ventral segments conspicuously yellow. Wings except apices yellowish tinged. Proboscis projecting slightly beyond second antennal joint; third antennal joint slender, five or six times as long as first two together; club consists of about three-fourths of third joint, robust, of about equal width throughout, except at apical fourth, which tapers. Hind femora thickened at apical three-fourths and spinose beneath; tibiæ straight. First posterior cell open. Length, 24 mm.

Leptomydas pantherinus Gerst.

1868. Gerstaecker, Stet. Ent. Zeit., XIX, 85.

The males here are black except the knees, tibiæ, tarsi, and posterior margins of the abdominal segments especially the apical ones.

Before me are 4 ♂, 4 ♀, from the following localities in California: Colma, July to August, (J. A. Kusche), [Cal. Acad. Sci.]. San Francisco, March, (J. A. Kusche), [Acad. Cal. Sci.]. Mesa Grande, Sonoma County, June, (J. P. Baumberger), [A. N. S. P.].

Leptomydas sponsor O. S.?

1886. Osten Sacken, Biol. Cent. Amer., Dipt., I, 68.

A male from Coronado, May, (F. E. Blaisdell), [Cal. Acad. Sci.], which seems to be this species has the following characters:

Head and thorax entirely black with white polished pilose markings. First abdominal segment and following ones, laterally, black;

lateral apical angles of two to six white; remainder of abdomen rufous. Fore and middle femora dark basally; apices of their tibiæ, and tarsi yellow. Hind legs except coxae rufous. Wings brownish with darker borders to the veins. Proboscis as long as the black antennæ. Halteres black.

Leptomydas brachyrhynchus O. S.?

1886. Osten Sacken, Biol. Cent. Am., Dipt., I, 69.

There are before me from the following California localities: 3♂, San Diego, and Mokelumne Hill, Calaveras Co., (F. E. Blaisdell), [Cal. Acad. Sci.]; 1♀, Barstow, San Bernardino Co., June, (J. R. Haskin), [Cal. Acad. Sci.]. Although these were collected from widely separated localities, they seem to be conspecific. The only difference in the Mokelumne Hill specimen is the narrow, dark, bases of the abdominal segments and the slight paling in the color of the apex of the antennal club.

A brief description of the male is given below. The species is based on a female from Mexico.

♂. Wax yellow; head except middle of face, apices of third antennal joint and entire club, mesonotum except humeri and lateral margins, scutellum, more or less of pectus, metanotum, first abdominal segment, stigmatic spot on second, spot on lateral margins of all segments, and halteres, black. All pilosity yellow. Two median and lateral mesonotal stripes and sometimes apex of club, pale. Wings yellow. Bases of abdominal segments sometimes narrowly black. Third antennal joint three times as long as first two together, equalling the club; the latter tapering to near apex, then abruptly attenuating to a rather blunt apex. Proboscis short. Hind femora slightly thickened on apical half, with few flexor bristles; tibiæ without spurs. First posterior cell closed. Length, 17 mm.

SYRPHIDÆ.

Omegasyrphus baliopterus Loew.

1872. *Microdon baliopterus* Loew, Berl. Ent. Zeit., XVI, 86. (Cent., X, 56.)

Originally described from Texas. I can report the following: One male from Mexico with the first posterior cell completely divided by the extension of the stump from the third vein. One female from Round Mountain, Texas. One female, Mill Valley, California, June, (E. P. VanDuzee), [Cal. Ac. Sci.]. The last is a dark specimen showing the antennæ black, or, in certain angles the first joint brownish; femora black with tibiæ and tarsi brownish.

Otherwise similar to, and apparently conspecific with, the two first noted specimens.

Mixogaster breviventris Kahl.

1897. Kahl, Kans. Univ. Quart., VI, 137.

Originally described from Kansas. Before me are two specimens from Yaphank, Long Island, New York, September, (W. T. Davis).

Callicera johnsoni Hunter.

1896. Hunter, Can. Ent., XXVIII, 87.

One male from Round Mountain, Texas, differs somewhat from the original description. It wants the opaque marks on the face, cheeks, and abdomen, except that there are faint indications of narrow, semi-opaque bands on second and third segments.

Callicera montensis Snow.

1892. Snow, Kans. Univ. Quart, I, 34 (pl. VII, f. 4).

One specimen, Grand Canyon, Arizona, 7000 feet alt., May, (F. M. Jones). This agrees with the original description but the pile of the pleura, pectus, and venter of the abdomen is black. Snow says that the pile of the thorax and abdomen is "everywhere" golden red. The pile of the eyes in this specimen is blackish brown, not golden. The third antennal joint is at least four times as long as the first and second together. No pale articulations on the tarsi.

Can this be distinct from *montensis*? The species was originally described from Colorado, 9000 feet alt., and subsequently reported from New Mexico, at 9500 feet alt.

Merodon equestris var. **validus** Verr.

1822. *Merodon validus* Meigen, Syst. Beschr., III, 365.
1901. *Merodon equestris* Fab. var. *validus* Verrall, Brit. Flies, VIII, 559.

One female, San Francisco, California, April, (C. L. Fox), [Cal. Ac. Sci.].

CONOPIDÆ.

Dalmannia blaisdelli new species.

Differs from *picta* Will. and *nigriceps* Lw. in having the pilosity black, although on the second and third abdominal segments of the male it is somewhat paler.

♂. Abdominal segments 2, 3, 4, narrowly yellow at apices, which color extends basally at the middle as a wedge but not attaining the bases of the segments; fifth segment with a medial yellow spot. All

femora black except the broad apices. All pile black except on second and third abdominal segments. Length, 6–7 mm.

♀. Similar but the yellow on segments 3, 4, 5, with sublateral, rectangular prolongations basally and the medial wedge attains base of fifth; sixth segment yellow with two black apical converging stripes. Femora yellow except fore one above; and hind one with subapical black ring. All pile black.

Type.—♂; Colorado [A. N. S. P. No. 6211]. *Paratype.*—1 ♀, Mokelumne Hill, Calaveras Co., California, August, (F. E. Blaisdell), [Cal. Acad. Sci.].

ORTALIDÆ.

Rivellia cognata new species.

Same as *flavimana* Lw. but the legs are entirely yellow excepting that the hind tibiæ and apices of tarsi are brownish, but never black. The wing markings are similar.

Type.—♂; Swarthmore, Pennsylvania, June 11, 1905, (E. T. Cresson, Jr.), [A. N. S. P. No. 6212]. *Paratypes.*—2♂, 1 ♀; topotypical.

A series of seventeen specimens from the following localities: Pennsylvania: Manayunk, Philadelphia, Swarthmore. New York: Ithaca. New Jersey: Medford. Georgia. Florida: St. Petersburg. Wisconsin: Beaver Dam. It seems to be more common than *flavimana* in collections. There is much to suggest *Herina metallica* v. d. Wulp, but I cannot find any reference in the description of or in the figure of that species that the costal cell is entirely infuscated. The figure shows the infuscation only at the extreme base, while with the present form this color extends to the first band as it does in *flavimana*. There should not be any confusion between the present form and *quadrifasciata*. In that species the first basal cell is entirely infuscated and the abdomen often rufous, and on the whole is a much more robust species.

SEIOPTERA Kirby and Spence.

1817. Kirby and Spence, Intro. Ent., II, 305.
1830. *Myodina* Desvoidy, Essai Myod., 727.
1867. *Seoptera* Loew, Berl. Ent. Zeit., XI, 295.

This genus was proposed in a very meagre way, but as a species is included in the original citation, the name is valid. It is based on *Musca vibrans* Linn. (1761). The limit of the genus has been very much restricted as only one or two species are known to belong to it.

In the study of some North American material in conjunction with typical *vibrans* from Europe, I have made some notes on the genus and the species included, and have found a new form which seems to belong here. The form found within our fauna has been listed in the catalogues and placed in collections as *colon* Lw., and sometimes as *vibrans* Linn. For some time I have been endeavoring to separate these by means of the descriptions, notes given by Loew, and examination of material, but with no degree of satisfaction. A critical study of a specimen of *vibrans* from Europe has given the same result, and so it is evident to me that *colon* and *vibrans* are synonymous. The examination of the types of these two species may give contradictory results.

Seioptera vibrans Linn.

1761. *Musca vibrans* Linnaeus, Faun Suec., 1867.
1867. *Seioptera colon* Loew, Berl. Ent. Zeit., XI, 296, (Cent., II, 6).

In this species we have the frons one-third to one-fourth width of head, opaque, red orange, not with conspicuous silvery orbits; median orange portion black setulose. Face slightly lighter, more yellowish, in profile nearly straight on account of the prominent, obtuse keel; orbits silvery. Cheeks concolorous. Occiput, thorax and abdomen, shining black. Legs black but tarsi brown, especially basally. No supraalar bristles. Mesopleura with pale micro-pubescence; sternopleura with 1–2 bristles well separated. Ovipositor with basal segment narrow, much narrower than long. Wings hyaline with stigma and spot at apical margin infuscated. First posterior cell narrowed so that its apex is no broader than its base. Anal cell with slight point at apex.

The specimens from our fauna, with one or two exceptions, seem to have only one sternopleural bristle. These bristles are so slender and hair-like that they are probably variable. Seventeen male and six females have been examined from Canada, Rhode Island, New York, Pennsylvania, Illinois, and Montana.

Seioptera albipes new species.

Here we have a species offering a different facial profile from that of *vibrans*, being distinctly concaved with a weak carina. The frons is broader than in that species, with shining orbits which are only very narrowly silvery. There is a distinct supraalar bristle and the mesopleura are black, setulose or pubescent; sternopleura with two hair-like bristles close together. The fore tibiæ and tarsi,

and middle and hind tarsi are white; the latter not at all darkened apically. The fore tibiæ may be darkened at bases and the middle tibiæ may be light brown. The basal segment of ovipositor is very large, about one-half as long as the abdomen and as broad as long. The first posterior cell is broader at apex than at base, almost twice as broad; anal cell truncate, not acute. In other respects similar to *vibrans*.

Type.— ♀ ; Swarthmore, Delaware County, Pennsylvania, May 25, 1912, (E. T. Cresson, Jr.), [A. N. S. P. No. 6210]. A series of 1 ♂, 3 ♀, from Ithaca, New York, May to June, [Cornell] are conspecific.

That this species may not be congeneric with *vibrans* is possible, but I am unable to place it in any other genus. The fact that *Sieoptera* is not a typical Ulidiinæ, especially in the construction of the anal cell, allows one to enlarge somewhat on its limits. The present species will no doubt be found in many collections under *colon* or *vibrans*.

PSILIDÆ.

Psila angustata new species.

Similar to *lateralis* Lw., but larger and the third antennal joint is much longer. In *lateralis* the size is 3.5–3.9 mm., and the third antennal joint is scarcely longer than the second. Tawny to yellow; third antennal joint apically, occiput spot, face medianly, faint spot behind vetrical bristles, pleural stripe under humeri to base of halteres, and entire abdomen, black. Lower part of pleura, coxæ, and legs, pale yellow. Wings hyaline, yellowish to brownish along costa and veins. Arista white pubescent. Third antennal joint slender, three times as long as second. Length, 4.7–5.9 mm.

Type.—♂; Ithaca, New York, August 23, 1904, [Cornell University]. *Paratypes*.—3 ♂, 5 ♀ ; topotypical.

PIOPHILIDÆ.

Mycetaulus hornigi new species.

Agreeing with the generic description of *Mycetaulus*, but superficially simulating *Piophila nigriceps* Meig. The two dorsocentral bristles each with a stout setula before it, but behind the suture, and are readily distinguished from the short abundant pile. Fore femora with 3–4 flexor bristles at apical end of the posterior flexor series of hairs.

♂. Black, polished. Occiput subopaque but not polished. Propleura with silvery dot. Second antennal joint, base of third, base

of fore femora, middle and hind legs including coxæ entirely, and veins, yellow. Fore coxæ, squamæ, and halteres white. Wings entirely clear. Frons one-third width of head, but slightly narrowed at antennæ. Cheeks broad as third antennal joint. Scutellum flat. Posterior cross vein slightly longer than ultimate section of fifth; anal vein slightly curved, not attaining margin.

Type.—♂; Philadelphia, Pennsylvania, June 3, (H. Hornig), [A. N. S. P. No. 6217]. *Paratype.*—♀; topotypical.